Savannah River Remediation

We do the right thing.

EM Environmental Management

safety ❖ performance ❖ cleanup ❖ closure

Supplemental Salt Initiative: Progress Update

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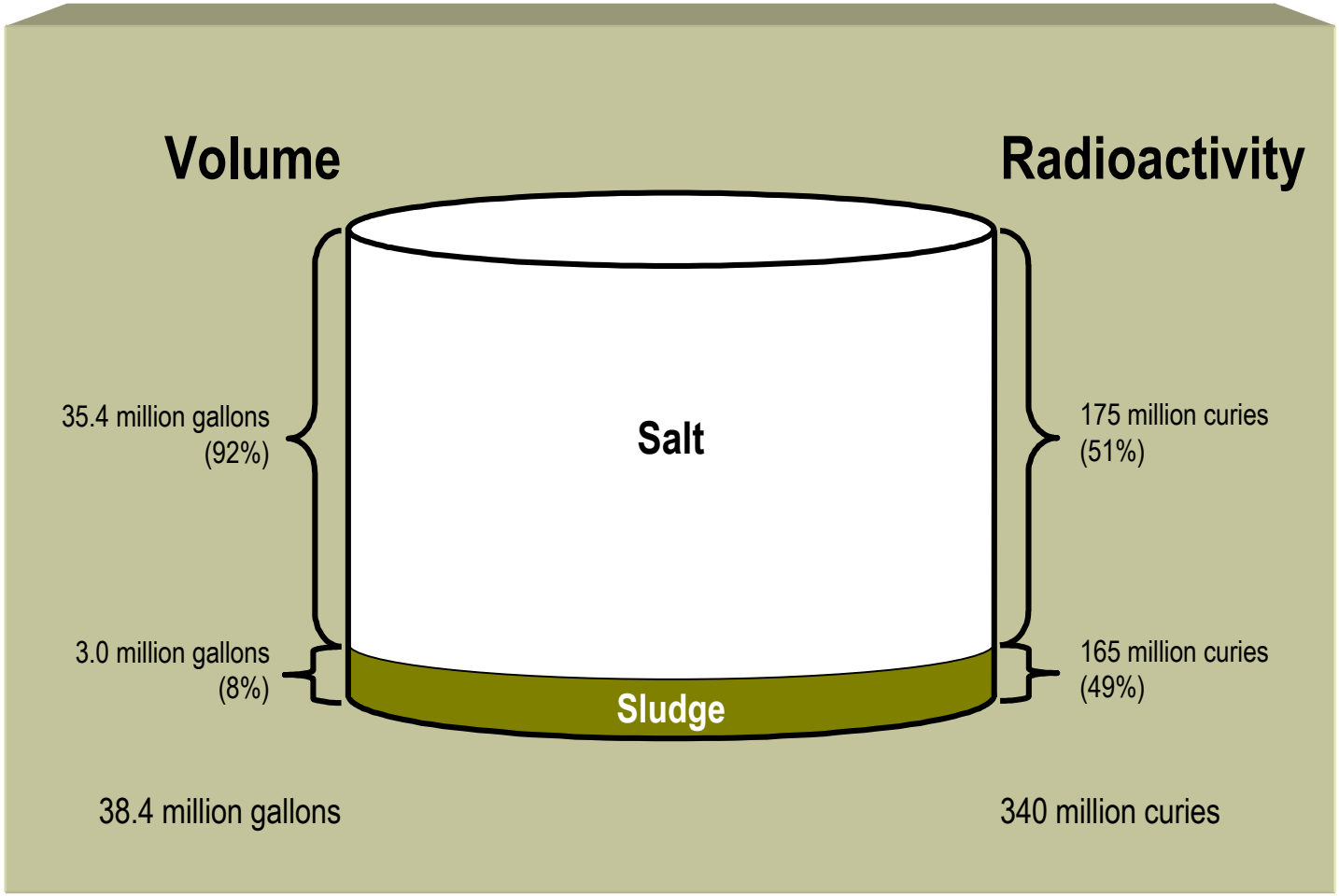
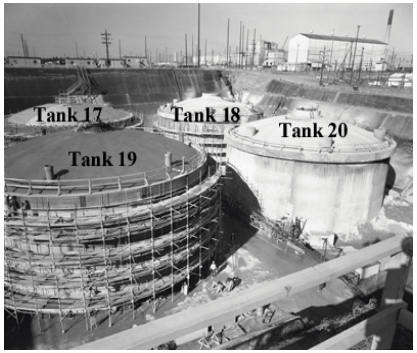
SRR-STI-2011-00388

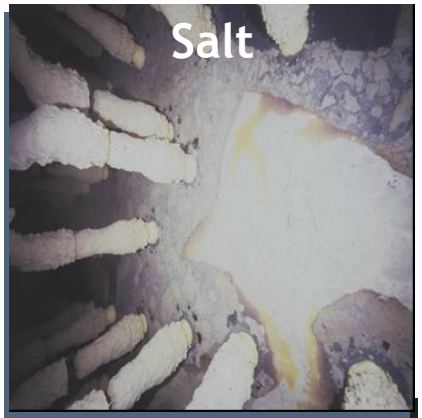
PURPOSE

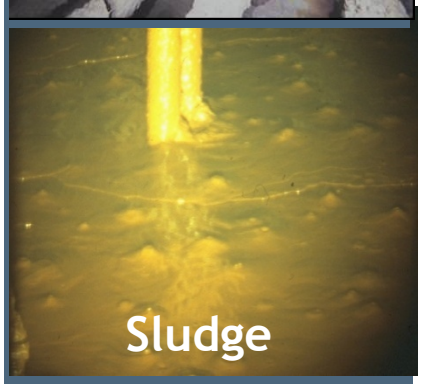
- SSI presentation is being given to cover topics from Waste Management Committee 2011 Work Plan

The Challenge



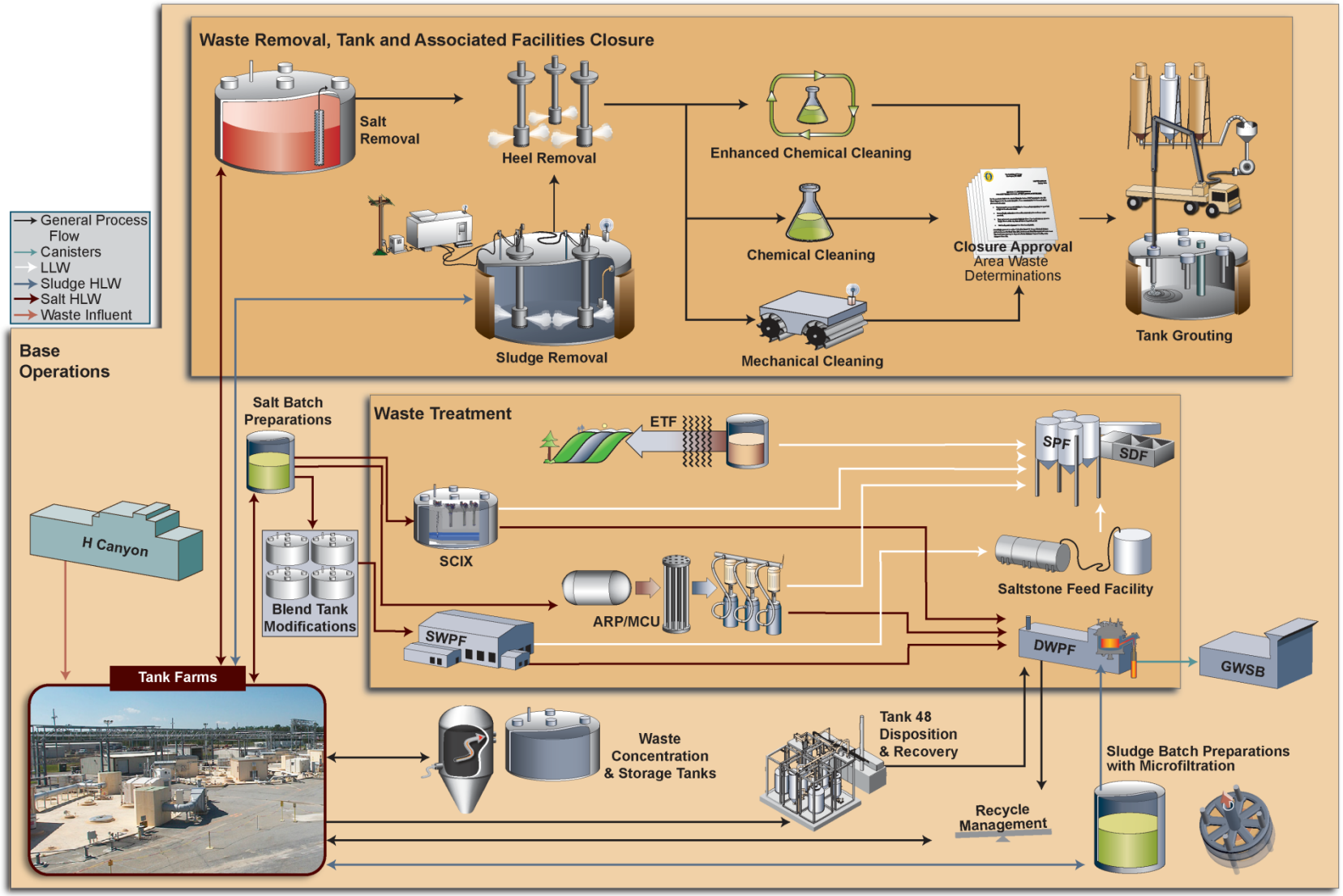




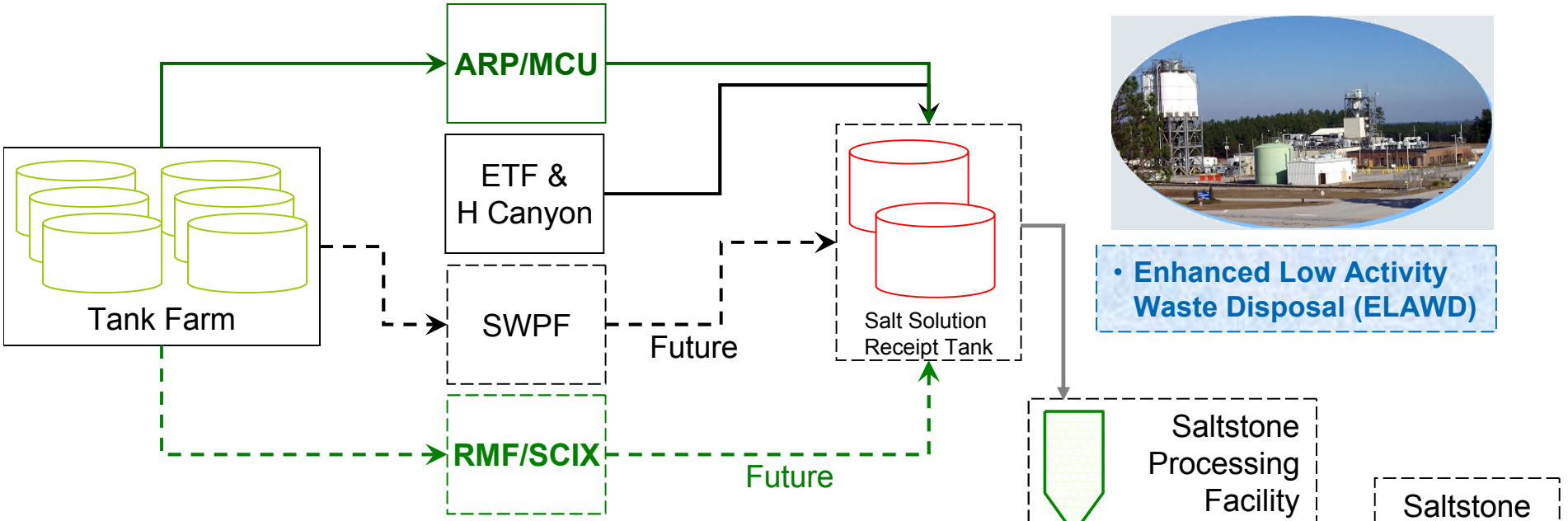


Inventory values as of 2011-03-31

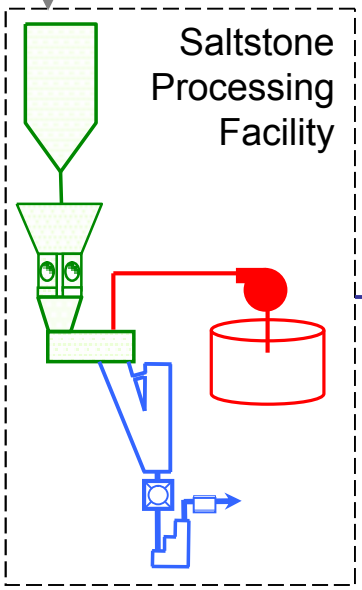
SRS Liquid Waste System

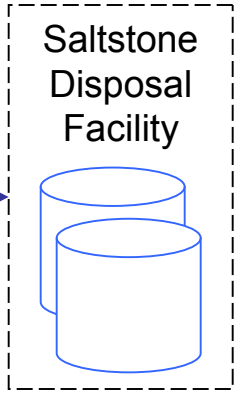


Supplemental Salt Initiative



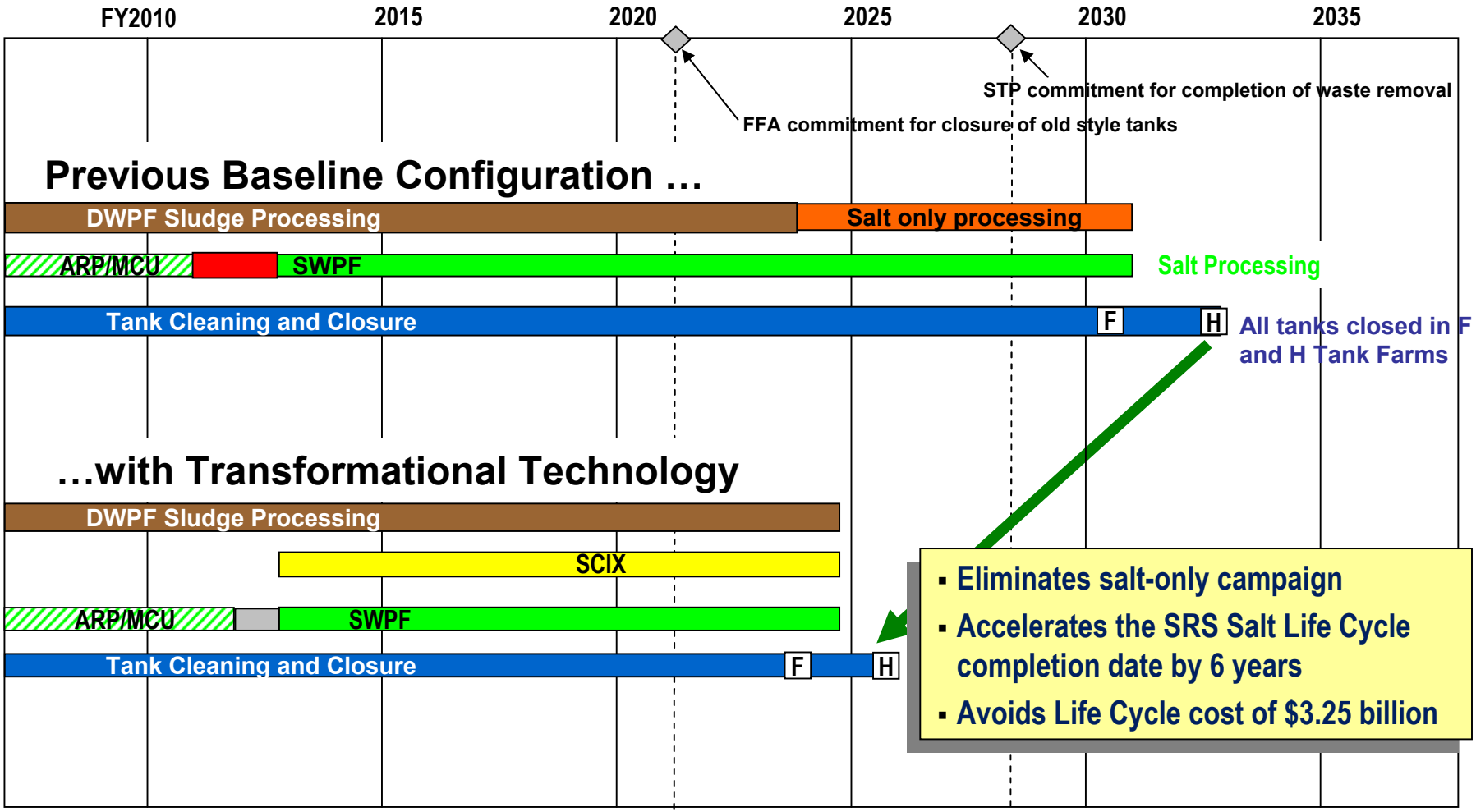
- Enhanced Low Activity Waste Disposal (ELAWD)





- Current salt processing through ARP/MCU
- SWPF (6M gals/yr) salt processing baseline results in program completion by 2030
- Supplemental Salt Initiative
  - Deploy SCIX (2.5M gals/yr) supplementing SWPF
  - Deploy next-generation solvent

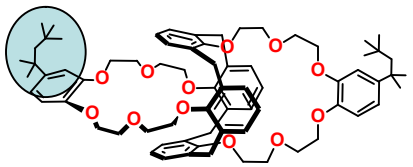
Supplemental Salt Initiative Results



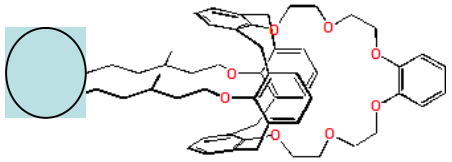
ARP/MCU and Next-Generation Solvent

- Continue operations
- Enhance performance and increase reliability
  - Filtration cycle improvements
  - Sampling improvements
  - Solvent control improvements

- Next Generation Solvent
  - Higher solubility isomer of BOBCalix
  - Enhanced stripping methodology
- Proven technology when introduced into SWPF



BOBCalix



MAXCalix

Next Generation Solvent Status

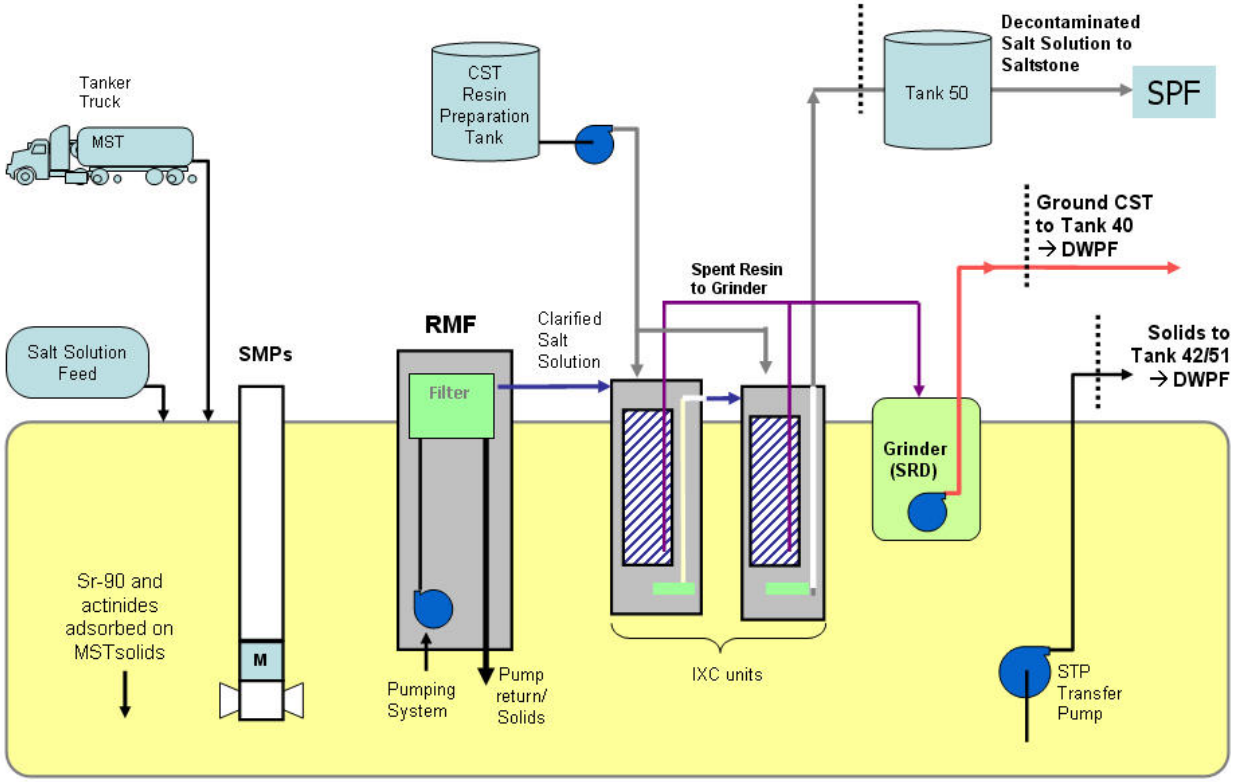
- Research & Development Status
  - R&D Input to Design Complete (3/31/2011)
  - R&D Safety Basis (DSA) Input on track to 6/30/2011
  - NGS R&D Completion on track to 9/30/2011

- Design and Installation Status:
  - Design Services is approximately 75% complete with all designs for ARP/MCU
  - ARP/MCU designs on schedule to be complete by 7/30/11
  - On-Line ISOPAR monitoring design to be complete by 9/30/11
- Construction initiated work package development, material procurement, and prefabrications

Small Column Ion Exchange Process Diagram

Operating Strategy

1. Add MST to waste tank
2. Mix tank contents
3. Filter sludge and MST/actinides from salt solution through the RMF
4. Pass clarified salt solution through ion exchanger
5. Transfer decontaminated salt solution to SPF Processing Facility
6. Transfer sludge and MST/actinide tank heel to DWPF
7. Transfer spent ion exchange media to DWPF



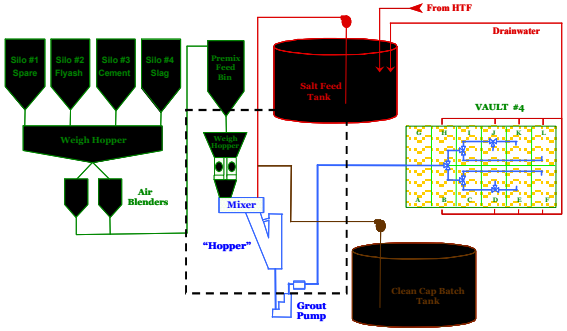
Existing SRS Tank 41 (Type III)

MST: Monosodium Titanate RMF: Rotary Micro-filter CST: Crystalline Silicotitanate IXC: Ion Exchange Column
SMP: Submersible Mixer Pump DWPF: Defense Waste Processing Facility

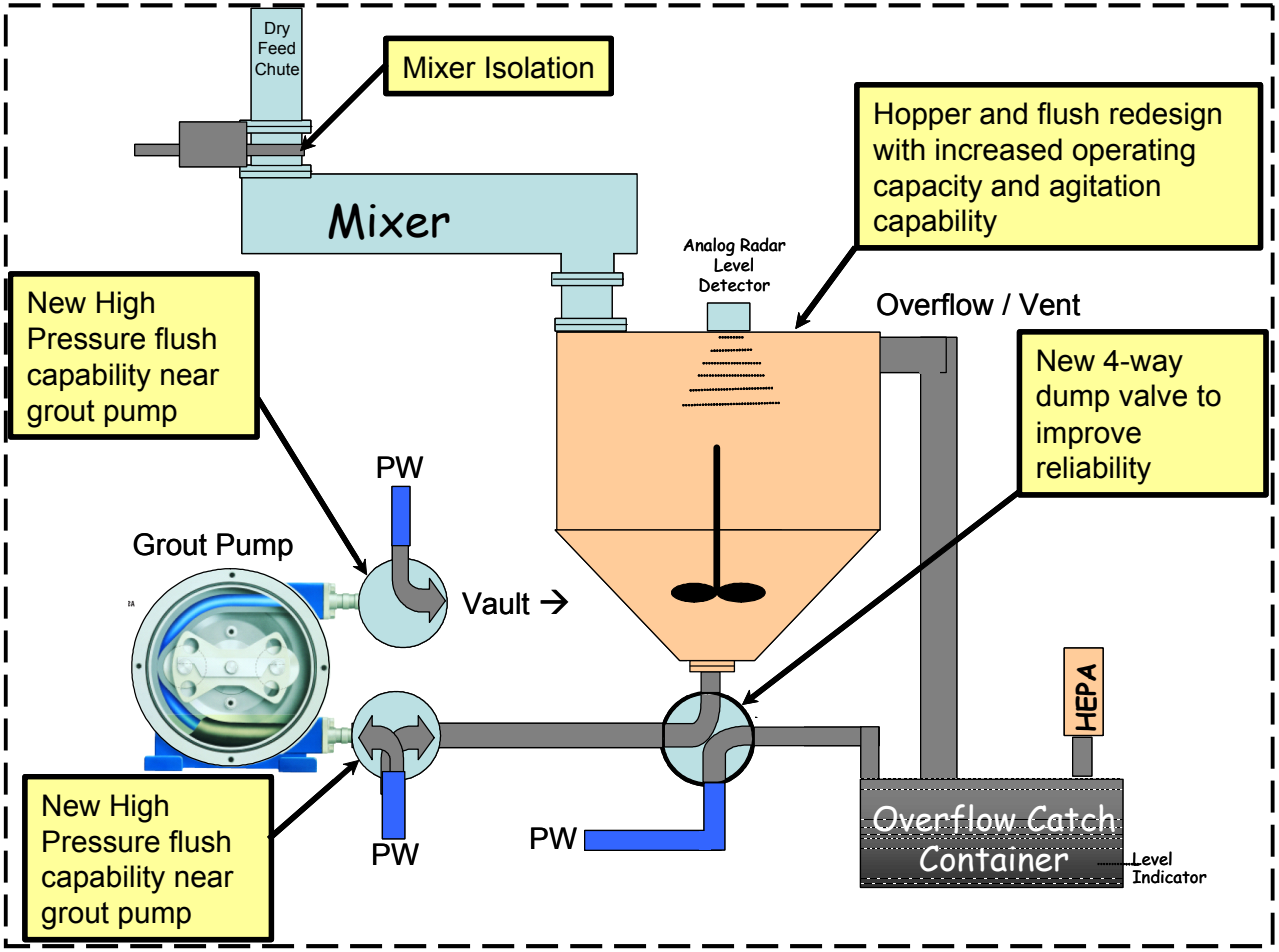
Small Column Ion Exchange Status

- Engineering & Design
  - Design Inputs are complete
  - Conceptual Design is complete
  - Detailed Design is progressing
- Long Lead Procurements
  - 4 of 6 major procurements awarded
  - SRD & CST remain
  - Intermediate procurements in development
- Construction
  - D&R ongoing – existing slurry pumps removed from 3 risers
  - Detailed Construction planning ongoing
- Testing and Acceptance
  - Initiated test planning
  - Initiated Acceptance and Commissioning planning

ELAWD: Saltstone Enhancements and Reliability



- Enhancements to meet the needs of salt processing capacity with supplemental salt processing initiatives deployed
- Equipment Upgrades
  - Dry Feed Control System
  - Salt feed pump
  - Hopper redesign
  - Air compressors
- Support 24/7 operations
- Potential improvements systematically reviewed and prioritized to achieve greatest increase in operating margin and reliability



ELAWD Status

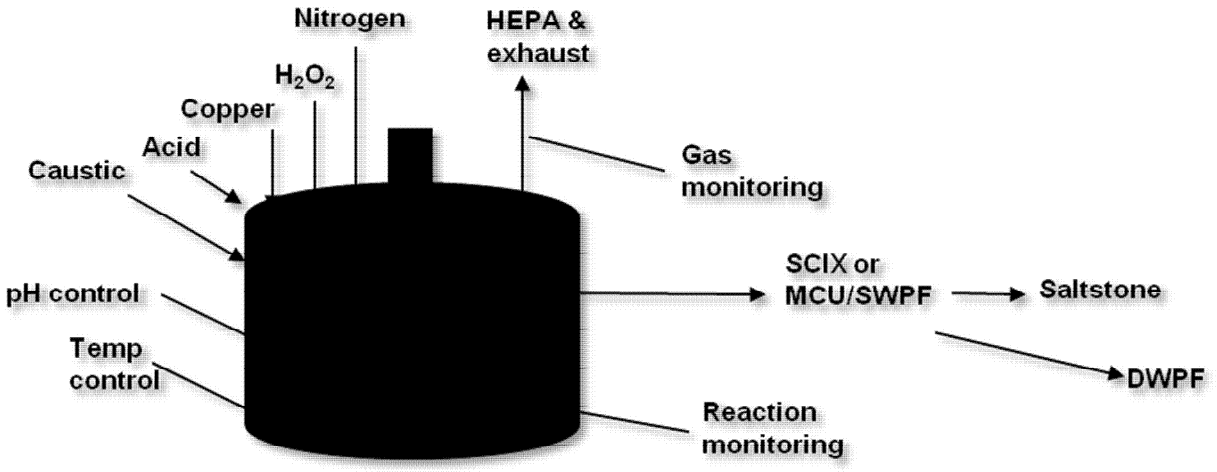
- All Design scope
  - Mixing and Transfer (underway)
  - Balance of plant (underway)
  - Dry Feeds (F/C 6/2011)
- Long-Lead Procurements
  - Mixing and Transfer (underway)
  - Balance of plant (F/C 7/2012)
  - Dry Feeds (F/C 6/2011)
- Other Than Design
  - Mixing and Transfer (F/C 5/2011 and 8/2011)
  - Balance of Plant (F/C 8/2011, 11/2011 and 9/2012)
  - Dry Feeds (F/C 9/2012)

Tank 48
Project Status

- Tank 48 is approximately 50% complete with design
- Project schedule and cost performance aligned with forecast
- Program progress has eliminated dependency on Tank 48 return to service to maintain accelerated waste disposition
  1. Significant program progress has eliminated dependency on Tank 48 return to service to maintain accelerated hazard reduction with reasonably conservative safety margin
  2. Increased competition for outyear funding
  3. Advent of DWPF enhancements provides previously unavailable capacity
  4. Reduced schedule weighting opens a window for further maturation of closely competing technologies

TPB Chemical Destruction in Small Tank

- Significant potential cost savings with chemical destruction without impact to liquid waste system plan
- Advancements in technology and system
  - Copper catalyzed Fenton's chemistry revealed near-complete TPB oxidation in alkaline conditions
  - Near-tank previously discounted due to the use of 96-H for Actinide Removal Process (ARP)



System Plan Alternatives to Tank 48 Return to Service

- Tank 48 FBSR project will undergo a timely suspension of work awaiting the evaluation of alternate technologies
- A delay in the return to service of Tank 48 does not impact:
  - the Federal Facility Agreement for tank closures
  - ability to adequately support SWPF operations
  - the continued safe execution of the SRR mission.

Summary

- Recent progress over the past few years has increased confidence and reduced overall program risk
- Technology advancements and system planning have revealed alternate technologies for Tank 48 waste disposition

- DOE-SR and SRR have “partnered” together to adjust integrated priorities to advance the program lifecycle.